

WHAT IS CLAIMED IS:

1. A stent-graft, comprising:

a tubular graft having a wall generally defining a circumference and having a lumen therein, the lumen extending axially between first and second open ends of the tubular graft;

5 an exo-skeleton for supporting the wall of the tubular graft, the exo-skeleton comprising a plurality of generally annular-shaped support elements distributed axially along the wall of the tubular graft, each support element including generally axial segments and generally circumferential segments;

a plurality of first fasteners for attaching the plurality of support elements to the wall of 10 the tubular graft, at least one generally axial segment being slidably engaged by each first fastener; and

a plurality of second fasteners for attaching the plurality of support elements to the wall of the tubular graft, each second fastener substantially anchoring a segment of the respective support element to the wall of the tubular graft.

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2. The stent-graft of claim 1, further comprising a stent on the first end of the tubular graft for substantially anchoring the first end of the tubular graft within a body passage.

3. The stent-graft of claim 1, wherein each of the plurality of support elements 20 comprises a generally sinusoidal shaped member which extends circumferentially around the wall of the tubular graft.

4. The stent-graft of claim 1, wherein the plurality of first fasteners are selected from the group consisting of sutures, staples, and wires.

5 5. The stent-graft of claim 1, wherein the plurality of second fasteners engage respective generally circumferential segments for preventing substantial axial movement thereof.

6. The stent-graft of claim 1, wherein alternating generally circumferential segments of each support element are engaged by the plurality of second fasteners.

10 7. The stent-graft of claim 1, wherein every generally axial segment of each support element is engaged by a first fastener.

8. The stent-graft of claim 1, wherein each support element is directable between a contracted condition for facilitating introduction within a body passage and an enlarged condition for deployment within the body passage.

15 9. The stent-graft of claim 1, wherein each support element is radially compressible to the contracted condition and biased to assume the enlarged condition.

10. The stent-graft of claim 1, wherein the second end of the tubular graft is bifurcated, and wherein the stent-graft further comprises:

a tubular graft extension segment extending from the second end, the tubular graft extension segment having a wall; and

5 a plurality of support elements attached to and distributed along the wall of the tubular graft extension segment, a portion of each support element being slidable along the wall of the tubular graft extension segment.

11. The stent-graft of claim 10, further comprising:

10 a tubular graft docking limb having a wall, the docking limb being attachable to the second end of the tubular graft adjacent the tubular graft extension segment; and

a plurality of support elements attached to and distributed along the circumferential wall of the tubular graft docking limb, a portion of each support element being slidable along the wall of the tubular graft docking limb.

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12. A stent-graft, comprising:

a tubular graft having a wall defining a periphery and a lumen therein, the lumen extending axially between first and second open ends of the tubular graft;

20 one or more support elements attached to the tubular graft, each support element extending generally peripherally around the tubular graft, each support element including generally axial segments and generally peripheral segments; and

a set of first fasteners attached to respective first wall regions of the tubular graft, each first fastener slidably securing one or more axial segments thereto, whereby the axial segments slidably secured by each first fastener may slide axially with respect to the respective first wall region.

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13. The stent-graft of claim 12, further comprising a stent on the first end for substantially anchoring the first end within a body passage.

14. The stent-graft of claim 13, wherein the stent on the first end comprises a coiled-
10 sheet stent.

15. The stent-graft of claim 13, wherein the stent includes external outwardly oriented hooks for engaging a wall of a body passage.

15 16. The stent-graft of claim 13, further comprising pro-thrombotic material on an exterior surface of at least the stent, or one of the first and second ends of the tubular graft.

17. The stent-graft of claim 12, further comprising a plurality of support elements distributed axially along the tubular graft for providing articulation of the tubular graft between
20 adjacent support elements.

18. The stent-graft of claim 17, wherein each first fastener slidably secures at least two axial segments of adjacent support elements to a respective first wall region, whereby the two axial segments independently slide axially with respect to the respective first wall region.

5 19. The stent-graft of claim 12, wherein the set of first fasteners is selected from the group consisting of sutures, staples, and wires.

10 20. The stent-graft of claim 12, further comprising a set of second fasteners attached to respective second wall regions of the tubular graft, each second fastener substantially anchoring a peripheral segment to the respective second wall region.

15 21. The stent-graft of claim 12, wherein the support elements are directable between a contracted condition for facilitating introduction within a body passage and an enlarged condition for deployment within the body passage, the support elements substantially supporting the tubular graft to hold the lumen of the tubular graft substantially open in the enlarged condition.

22. The stent-graft of claim 21, wherein the support elements are radially compressible to the contracted condition and biased to assume the enlarged condition.

20 23. The stent-graft of claim 12, wherein the tubular graft comprises a polymeric material.

24. The stent-graft of claim 23, wherein the polymeric material is selected from the group consisting of polyester, polytetrafluorethylene, dacron, teflon, and polyurethane.

5 25. The stent-graft of claim 12, wherein each support element comprises a generally serpentine shaped member.

26. The stent-graft of claim 25, wherein each serpentine shaped member comprises a wire formed into a generally curved zigzag shape.

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27. The stent-graft of claim 12, wherein the first end of the tubular graft has a cross-section that is substantially smaller than a cross-section of the second end of the tubular graft.

15 28. The stent-graft of claim 12, wherein the support elements are attached to an exterior surface of the tubular graft.